CITY OF PHILADELPHIA
DEPARTMENT OF PUBLIC HEALTH
AIR MANAGEMENT SERVICES

RACT PLAN APPROVAL

Effective Date: August 1, 2000

Amended Date: October 7, 2002, February 19, 2014

Expiration Date: None

Replaces Permit No. None

In accordance with provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and after due consideration of a Reasonably Available Control Technology (RACT) proposal received under the Pennsylvania Code, Title 25, Chapter 129.91 thru 129.95, of the rules and regulations of the Pennsylvania Department of Environmental Protection (PADEP), Air Management Services (AMS) approved the RACT proposal of the Facility below for the source(s) listed in section 1.A. Emission Sources of the attached RACT Plan Approval.

Facility:	Philadelphia Energy Solutions Refining and Marketing LLC (PES)
Owner:	Philadelphia Energy Solutions Refining and Marketing LLC
Location:	Girard Point Processing Area located at 3001 Penrose Ave Point Breeze Processing Area located at 3144 Passyunk Ave
Mailing Address:	3144 Passyunk Ave., Philadelphia, PA 19145
SIC Code(s):	2911
Plant ID:	1501 and 1517
Facility Contact:	Charles Barksdale
Phone:	(215) 339-2074
Permit Contact:	Charles Barksdale
Phone:	(215) 339-2074
Responsible Official:	Nithia Thaver and James Keeler
Title:	Vice Presidents and General Managers

Edward Wiener, Chief of Source Registration — Date

The RACT plan approval is subject to the following conditions:

1. The purpose of this Plan Approval is to establish Nitrogen Oxides (NOx)/Volatile Organic Compound (VOC) Reasonably Available Control Technology (RACT) for PES Girard Point Processing Area and Point Breeze Processing Area. This includes the following emission sources and control equipment:

   A. Emission Sources

   (1) Process Heaters: Unit 137: F1 heater (415 MMBTU/hr)
   F2 heater (155 MMBTU/hr)
   F3 heater (60 MMBTU/hr)
   Process heaters F1 and F2 burn refinery fuel gas or refinery fuel oil. Heater F3 burns refinery fuel oil.

   (2) Process Heater: Unit 231: B-101 heater Heater fires refinery fuel gas.

   (3) Process Heater: Unit 433: H-1 heater (243 MMBTU/hr) Heater fires refinery fuel gas.

   (4) Process Heaters: Unit 1332: H-400 heater (186 MMBTU/hr)
   H-401 heater (233 MMBTU/hr)
   ~~H-600 heater (21.3 MMBTU/hr)~~
   ~~H-601 heater (48 MMBTU/hr)~~
   ~~H-602 heater (49 MMBTU/hr)~~
   ~~H-1 heater (45 MMBTU/hr)~~
   H-2 heater (60 MMBTU/hr)
   ~~H-3 heater (43 MMBTU/hr)~~
   These heaters burn refinery fuel gas.

   (5) Process Heater: Unit 1232: B-104 heater (70 MMBTU/hr) Heater fires refinery fuel gas.

   (6) Boiler House #3: Boiler #37 (495 MMBTU/hr)
   Boiler #38 (495 MMBTU/hr)
   Boiler #39 (495 MMBTU/hr)
   Boiler #40 (660 MMBTU/hr)
   These boilers fire refinery fuel gas or refinery fuel oil.

   (7) ~~Sludge Incinerator 8832: Unit was 44 MMBTU/hr and burned refinery fuel gas or refinery fuel oil.~~

   (8) ~~Sulfur Recovery Unit 532: SO2 incinerator was 16 MMBTU/hr. Unit burned refinery fuel gas.~~

   (9) ~~1232 FCCU CO Boiler: CO waste gas combustion unit (580 MMBTU/hr) burns process waste gas, refinery fuel gas and refinery fuel oil.~~

   (10) Asphalt Heater: ~~H1 (12.8 MMBTU/hr)~~
   ~~H2 (12.8 MMBTU/hr)~~
   ~~H3 (12.8 MMBTU/hr)~~
   ~~H5 (12.8 MMBTU/hr)~~
   These heaters burned fire refinery fuel gas.

   (11) Crude Unit 210: Section A HTR H101
   Section B HTR H201
   Section C HTR 13H1 (235.4 MMBTU/hr)
   These heaters above fire refinery fuel gas.

   (12) Hydrocracker Unit 859: HTR 1H1 (76 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.

HTR 1H2 (70 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
HTR 1H3 (211 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
~~HTR 1H4 (19 MMBTU/hr) Unit fires refinery fuel gas.~~

(13) Reformer Unit 864: HTR PH3 (80 MMBTU/hr)
HTR PH5 (90 MMBTU/hr)
HTR PH1 (80 MMBTU/hr)
~~HTR PH2 (45 MMBTU/hr)~~
HTR PH4 (57 MMBTU/hr)
~~HTR PH7 (45.5 MMBTU/hr)~~
HTR PH11 (74 MMBTU/hr)
HTR PH12 (85.1 MMBTU/hr)
These heaters fire refinery fuel gas and refinery fuel oil.

(14) Hydrogen Plant 861: HTR 3H1S (123 MMBTU/hr)
HTR 3H1N (125 MMBTU/hr)
These heaters burned refinery fuel gas.

(15) Distillate HDS Unit 865: HTR 11H1
~~HTR 11H2~~ HTR 11H2
These heaters fire refinery fuel gas.

(16) ~~Gas Oil HDS Unit 866: HTR 12H1Heater fires refinery fuel gas.~~ Gas-Oil HDS Unit 866: HTR 12H1Heater fires refinery fuel gas (17) 22 Boiler House: Boiler #1 (169 MMBTU/hr)
Boiler #2 (169 MMBTU/hr)
Boiler #3 (203 MMBTU/hr)
These three boilers burn only refinery fuel gas or natural gas and are equipped with Ultra Low NOx Burners.

(18) Reformer Unit 860: HTR 2H3 (174.67 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
HTR 2H5 (155 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
~~HTR 2H1 (49 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.~~
HTR 2H2 (69.78 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
HTR 2H4 (99.44 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
~~HTR 2H6 (36.7 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.~~
HTR 2H7 (59 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.
~~HTR 2H8 (49.6 MMBTU/hr) Unit fires refinery fuel gas and refinery fuel oil.~~
Boiler 2H9 (165 MMBTU/hr) Unit fires refinery fuel gas or natural gas.

~~(19) 868 FCCU HTR 8H101 (49.5 MMBTU/hr) Unit fires refinery fuel gas.~~ 868 FCCU HTR 8H101 Unit fires refinery fuel gas

(20) 868 FCCU Catalyst Regenerator

~~(21) 867 Sulfur Recovery Unit Incinerator~~

~~(22) Emergency Flares~~

(23) Cooling towers

(24) Fugitive leaks: valves, flanges, compressors, pumps, pipes.

B. Control Equipment

(1) Ultra-low NOx burner (ULNB) systems are installed on the following sources to control NOx emissions:
Unit 433 H-1 heater
Unit 1232 B-104 heater

#3 Boiler House boilers #37, #38, #39, and #40.
Unit 210 H201 heater

2. This approval requires and authorizes:

A. The installation of the Ultra Low NOx Burners on 433 H-1 heater, 1232 B-104 heater, #3 Boiler House boilers #37, #38, #39, and #40, and 210 H201 heater to comply with RACT requirements. The installation of the burners has been completed.

i. The installation of Ultra Low NOx Burners on 231 B101 heater and 865 11H1 heater to comply with RACT requirements after the issuance of Plan Approval No. 12195.

B. PES will use combustion tuning to comply with RACT requirements for the following heaters:

Unit 137: F1 heater, F2 heater, F3 heater
Unit 231: B 101 heater
Unit 1332: H-400 heater, H-401 heater, H-2 heater
Crude Unit: 210A HTR H101, 210C HTR 13H1
Hydrocracker Unit 859: HTR 1H1, HTR 1H2, HTR 1H3
Reformer Unit 864: HTR PH3, HTR PH5, HTR PH1, HTR PH2, HTR PH4, HTR PH11, HTR PH12
Hydrogen Plant 861: HTR 3H1S, HTR 3H1N
Distillate HDS Unit 865:HTR 11H1, HTR 11H2
Reformer Unit 860: HTR 2H3, HTR 2H5, HTR 2H4, HTR 2H2, HTR 2H7
~~Gas Oil HDS Unit 866: HTR 12H1~~ Gas Oil HDS Unit 866: HTR 12H1,
Unit 868: HTR 8H101

C. All fuel burning sources will be capped at the heat input specified in the table below. If PES desires to raise the cap, a RACT evaluation will have to be performed at that new heat input. The economic evaluation will be made using cost of living increases. Changes will require a resubmission as revision to the PA State Implementation Plan. The applicant shall bear the cost of public hearing and notification required for EPA approval as stipulated in 25 PA Code §129.9(h). Modifications or changes may require additional controls or more strict emission limits depending on the applicable regulation triggered as a result of the modification or change.

Process Unit	Source	Heat Input Cap (MMBTU/hr)
Unit 137:	F1 heater	415
	F2 heater	155
Unit 433:	H-1 heater	243
Unit 1332:	H-400 heater	186
Unit 1232:	B-104 heater	70
Boiler House #3:	Boilers #37, #38, #39	495
	Boiler #40	660
Hydrocracker Unit 859:	HTR 1H1	76
	HTR 1H2	70
Reformer Unit 864:	HTR PH3	80
	HTR PH5	90
	HTR PH2	45
	HTR PH4	57
Hydrogen Plant 861:	HTR 3H1S	123
	HTR 3H1N	125

D. PESshall monitor all fuel input to all heaters and boilers with BTU limitations on a daily basis to insure capacity limits are not exceeded or PES shall install fuel limiting devices on the heaters or boilers to keep capacities below allowable. The compliance method must be in place by June 30th 2000.

E. ~~All fuel combustion sources with heat input equal to or greater than 20 MMBTU/hr and less than 50 MMBTU/hr shall comply with applicable presumptive RACT requirements of 25 PA Code 129.93(b)(2) (5). All fuel combustion sources with heat input less than 20 MMBTU/hr shall comply with presumptive RACT requirements of 25 PA Code 129.93(c).~~

F. RACT for 22 Boiler House: Boiler #1, Boiler #2, and Boiler #3 is combustion tuning.

G. RACT for Reformer Unit 860 HTR 2H9 is combustion tuning.

H. The 868 FCCU NOx emissions shall be limited to 569 tons per year calculated on a 365 day rolling average basis. PES shall follow good combustion practices controlling the level of excess oxygen and CO promoter in the regenerator to minimize NOx emissions from the regenerator.

J. PES shall utilize an inspection and maintenance/monitoring program for VOC fugitive emissions from cooling towers.

K. PES shall utilize a fugitive emissions leak detection and repair program (LDAR) for all valves, pumps, flanges, and compressors in VOC service. All applicable equipment shall be tagged by May 31, 1995. Monitoring of components shall begin by July 31, 1995 and shall be conducted on a quarterly basis (gaseous service) and an annual basis (liquid service) for all sources not covered under an existing LDAR program.

~~The 1232 FCCU CO Boiler: CO waste gas combustion unit (580 MMBTU/hr) shall comply with the presumptive RACT requirements of 25 PA Code 129.93(c)(4), which is installation, maintenance and operation of the source in accordance with manufacturers specifications.~~

3. RACT Implementation Schedule

A. Upon issuance of this approval, PES shall begin immediate implementation of the measures necessary to comply with the approved RACT proposal.

B. Sources proposing combustion tuning to comply with RACT requirements of 25 PA Code 129.91(f) shall perform the annual combustion tuning by December 31st of each year not to exceed 12 months between tunings.

C. Sources applicable to presumptive RACT requirements of 25 PA Code 129.93(b)(2) shall complete the annual adjustment or tune-up by December 31st of each year not to exceed 12 months between tunings.

D. Sources proposing installing Ultra Low NOx Burners to comply with RACT requirements of 25 PA Code 129.91(f) shall perform combustion tuning annually by December 31st of each year not to exceed 12 months between tunings.

E. The installation of Ultra Low NOx Burners on 231 B101 heater and 865 11H1 heater to comply with RACT requirements within 18 months after the issuance of Plan Approval No. 12195. The 231 B101 heater shall be limited to 91 MMBTU/hr and 0.122 lbs NOx/MMBTU until the burners are installed. The 865 11H1 heater shall be limited to 72.2 MMBTU/hr and 0.113 lbs NOx/MMBTU until the burners are installed. The 0.030 lbs/MMBTU NOx emission limit listed below for each unit will not become applicable until the burners are installed.

4. Testing Requirements and Stack Emission Limitations

A. For units installing ULNB, PES shall conduct performance tests for NOx. The results of these tests have been submitted to AMS.

B. The final NOx RACT emission limits for the #3 Boiler House boilers, 137 Unit F1 heater, #22 Boiler House boilers: #1, 2, & 3, Unit 210 H201 heater, and the 860 unit Boiler 2H9 have been established through the use of Department approved Continuous Emission Monitoring System (CEMS). Compliance with the limitations listed below will be on a 30-day rolling average based on hourly averages of CEM data, except for the Unit 210 H201 heater, which will be on a 365-day rolling average based on hourly averages of CEM data.

Source	Limitation
Boiler House #3 – boilers #37, #38, #39, and #40	0.330 lbs. NOx/MMBTU
137 Unit F1 heater	0.230 lbs. NOx/MMBTU
Reformer Unit 860 Boiler 2H9	0.20 lbs. NOx/MMBTU
#22 Boiler House – boilers #1, #2, and #3	0.20 lbs. NOx/MMBTU
Unit 210 H201 heater	0.030 lbs. NOx/MMBTU

C. Compliance with emission limits for combustion sources listed below shall be determined by quarterly stack sampling with a portable NOx analyzer. After one year sampling, PES may petition AMS for semi-annual monitoring. AMS

may, at any time, require three one-hour stack tests per fuel type for each unit where fuels can be fired separately. AMS may, at any time, require three one-hour stack tests for dual-fuel type combustion sources where both fuels must be fired at the same time and compliance with emission limits will be through the use of one set of three one-hour stack tests.

	Limitation (lbs. NOx/MMBTU)	
Source	Gas	Oil
Process Heater Unit 433 H-1 heater	0.060	N/A
Process Heater Unit 1332 H-400 heater	0.156	N/A
Process Heater Unit 1332 H-401 heater	0.156	N/A
Crude Unit 210A HTR H101	0.089	
Crude Unit 210C HTR 13H1	0.104	0.4
Hydrocracker Unit 859 HTR 1H3	0.134	0.4
Hydrogen Plant 861 HTR3H1S	0.133	N/A
Hydrogen Plant 861 HTR3H1N	0.133	N/A
F-2 @ 137 Unit	0.257	0.4
F-3 @ 137 Unit	N/A	0.4
B-101@ 231 Unit (until ULNB installed)	0.122	N/A
B-101@ 231 Unit (after ULNB installed)	0.03	N/A
H-2 @ 1332 Unit	0.300	N/A
B-104 @ 1232 Unit	0.177	N/A
1H-1 @ 859 Unit	0.123	0.4
1H-2 @ 859 Unit	0.123	0.4
PH-3 @ 864 Unit	0.284	0.4
PH-5 @ 864 Unit	0.283	0.4
PH-1 @ 864 Unit	0.167	0.4
PH-4 @ 864 Unit	0.102	0.4
PH-11 @ 864 Unit	0.145	0.4
PH-12 @ 864 Unit	0.119	0.4
11H-1 @ 865 Unit (until ULNB installed)	0.113	
11H-1 @ 865 Unit (after ULNB installed)	0.113	N/A
2H-3 @ 860 Unit	0.163	0.4
2H-5 @ 860 Unit	0.163	0.4
2H-2 @ 860 Unit	0.350	0.4
2H-4 @ 860 Unit	0.270	0.4
2H-7 @ 860 Unit	0.157	0.4
Unit 865 11H2 heater	0.113	N/A
Unit 866 12H1 heater	0.113	N/A
Unit 868 8H101 heater	0.113	N/A

D. All annual combustion tuning shall at a minimum meet the requirements set forth in 129.93 (b)(2) through (5).

E. At least thirty (30) days prior to a performance NOx test, PES shall inform AMS of the date and time of the scheduled test.

F. PES shall conduct performance tests to determine compliance with the lbs NOx/MMBTU emission limits of this plan approval for the following heaters:

i. Within 180 days of the installation of ULNBs for the Unit 231 B101 Heater and the Unit 865 11H1 Heater.

ii. Within 180 days of the issuance of Plan Approval No. 12195 for the Unit 210 H101 Heater, Unit 865 11H2 Heater, Unit 866 12H1 Heater, and Unit 868 8H101 Heater.

iii. Testing shall be conducted in accordance with 25 Pa. Code Chapter 139

G. The Unit 210 H201 Heater shall be equipped with continuous monitors and recorders for NOx and O_2. The continuous monitors and recorders shall meet the requirements of 25 Pa. Code Chapter 139.

H. Each heater listed below shall be limited to the following rolling 365-day heat input limits:

i. Unit 231 B101 Heater shall not exceed 915,420 MMBTU on a rolling 365-day basis.
ii. Unit 865 11H1 Heater shall not exceed 764,748 MMBTU on a rolling 365-day basis.
iii. Unit 865 11H2 Heater shall not exceed 562,392 MMBTU on a rolling 365-day basis.
iv. Unit 210 H101 Heater shall not exceed 1,681,920 MMBTU on a rolling 365-day basis.
v. Unit 210 H201A/B Heater shall not exceed 2,225,040 MMBTU on a rolling 365-day basis.
vi. Unit 866 12H1 Heater shall not exceed 536,112 MMBTU on a rolling 365-day basis.
i. Unit 868 8H101 Heater shall not exceed 525,600 MMBTU on a rolling 365-day basis

5. Recordkeeping and Reporting Requirements

A. The permittee shall maintain a file containing all the records and other data that are required to be collected to demonstrate compliance with NOx/VOC RACT requirements of 25 PA Code 129.91 - 129.94.

B. The records shall provide sufficient data and calculations to clearly demonstrate that the requirements of §129.91-129.94 are met.

C. Data or information required to determine compliance shall be recorded and maintained in a time frame consistent with the averaging period of the requirement.

D. Records shall be retained for at least two years and shall be made available to the Department on request.

6. ~~The operation of the aforementioned sources shall not at any time result in the emission of visible air contaminants in excess of the limitations specified in Section 123.41, particulate matter in excess of the limitations specified in Section 123.11 or sulfur oxides in excess of the limitations specified in Section 123.22, all Sections of Chapter 123 of Article III of the Rules and Regulations of the Department of Environmental Resources, or in the emission of any of these or any other type of air contaminant in excess of the limitations specified in, or established pursuant to, any other applicable rule or regulation contained in Article III.~~

7. The company shall not impose conditions upon or otherwise restrict the Department's access to the aforementioned source(s) and/or any associated air cleaning device(s) and shall allow the Department to have access at any time to said source(s) and associated air cleaning device(s) with such measuring and recording equipment, including equipment recording visual observations, as the Department deems necessary and proper for performing its duties and for the effective enforcement of the Air Pollution Control Act.

8. Revisions to any emission limitations incorporated in this RACT Approval will require resubmission as revision to the PA State Implementation Plan. The applicant shall bear the cost of public hearing and notification required for EPA approval as stipulated in 25 PA Code §129.9(h).

NOTE: Wording with ~~strikethrough~~ font is NOT being submitted for SIP approval.